

REMARKS

Summary of Interview

Applicants wish to thank the Examiner for conducting a personal interview with Examiner's Agent, Anthony P. Curtis, on April 1, 2004 in which the rejections of Claims 1-3 were discussed. During the interview, the Examiner indicated that he would issue a new, non-final Office Action upon entry of a response to the pending Office Action.

Rejection of Claims

In the outstanding Office Action, the claims have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,893,625 to Tamatani et al. ("Tamatani") in view of U.S. Patent No. 4,832,467 to Miyagi et al. ("Miyagi"). The rejections under 35 U.S.C. § 103(a) are respectfully traversed.

Independent Claims 1-3 are each directed to a liquid crystal display device comprising a pair of substrates with liquid crystal disposed therebetween and a reflective metal film disposed on a surface of one of the substrates. Each of these claims further recites that the reflective metal surface is not formed on a specific portion of the substrate. This portion is adjacent to the injection portion in the sealing material as recited in Claim 1, is adjacent to the drawn electrode region as recited in Claim 2, or is adjacent to the region in which the second drawn electrode and the display electrode of the other of the substrates are connected to each other on the sealing material, as recited in Claim 3. Moreover, each of these claims recites that the portion of the substrate that does not include the metal reflective surface provides an inspection area for the visual inspection of the injection portion (claim 1) or the drawn electrode regions (claims 2 and 3).

In conventional reflective liquid crystal displays, the reflective metal surface extends across the entire surface area of the substrate. Because the reflective metal surface is opaque, numerous problems relating to the manufacture and inspection of such devices have been encountered. One advantage of the arrangements recited in the pending claims is that, by limiting the coverage of the reflective metal surface to a

specific portion, when filling the LCD with liquid crystal, the inspection area is able to be viewed from the side thereby eliminating over or under filling. In addition, shorting of the electrodes by the reflective metal surface may be eliminated by judicious limitation of the area of coverage.

In rejecting these claims, the Examiner combines Tamatani and Miyagi. However, Applicants submit that, at least, these references are in entirely different fields of art and may not be combined. Miyagi teaches a non-glaring mirror for a car, while Tamatani teaches a reflective LCD for use in electronics.

Miyagi further specifically sets forth, in the background of his patent, that the use of liquid crystals is to be avoided in mirrors due to multiple disadvantages. Multiple disadvantages in using liquid crystal are disclosed by Miyagi, who instead teaches using electrochromic non-glaring mirrors in which the space between the two substrates is filled with an electrolyte liquid.

In addition, the Examiner stated that Miyagi discloses a reflective metal film formed on the surface of a substrate, and this may be applied to the LCD of Tamatani. Some motivation must exist to use a particular element from one art and applying it to another art. No motivation is provided in either Miyagi or Tamatani to provide a reflector for an LCD. Moreover, no motivation is provided in either reference to specifically add a reflector used in the outer surface of an electrochromic mirror, as taught by Miyagi, to an outer surface of the transparent LCD substrate of Tamatani. Although the Examiner stated that positioning the reflector as recited in the claims would be obvious "to distinguish the brightness between the display region and the non-display region," such a suggestion or motivation is nowhere apparent in the cited references. Neither Miyagi nor Tamatani mention brightness differences between display and non-display regions, not to mention anything about changing the shape of the reflective film to alter the brightness of different regions. Furthermore, such motivation is not apparent as in a non-display area, brightness cannot be altered as no reflection is seen. Nor do the visual inspection areas recited in the present claims have anything to do with the brightness of the display region.

Even further, Miyagi does not teach that the metal reflective film is not formed adjacent to the injection portion, for example. In fact, Miyagi does not even

teach an injection portion, the relationship between the injection portion and the metal reflective film, or any problems in manufacturing the mirror that would require the metal reflective film to not be formed adjacent to the injection portion.

Thus, even if Miyagi and Tamatani were somehow combined against the express teachings of one of the references, the references still fail to disclose the elements recited in the pending claims.

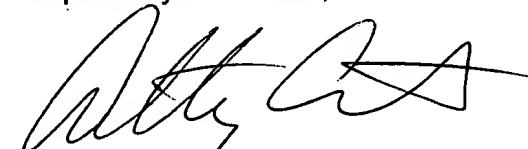
As before, Applicants still submit the recitation in the claims that the metal reflective surface provides an inspection area for the visual inspection of the injection portion (claim 1) or the drawn electrode regions (claims 2 and 3) is a structural rather than functional limitation. The pending claims do not positively recite that a visible inspection must be performed, but instead recite limitations of the arrangement that exist if a visible inspection is performed. The physical limitations recited each provide an area that permits inspection of the liquid crystal in the LCD.

For all of the reasons above, none of the cited references, alone or in combination, anticipate or suggest the arrangements of the pending claims. Thus, Applicants submit that the pending claims are patentable over the cited references.

Conclusion

In view of the claim arguments above, Applicants submit that all of the pending claims are in condition for allowance. If for any reason the Examiner is unable to allow the application in the next Office Action and believes that a telephone interview would be helpful to resolve any remaining issues, he is respectfully requested to contact the undersigned agent or attorney.

Respectfully submitted,



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